

## **SUPPLEMENTAL MATERIAL**

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Maternal Exposure to Nitrogen Dioxide during Pregnancy and Offspring Birthweight:  
Comparison of Two Exposure Models

Supplemental Material, Table 1: Adjusted<sup>a</sup> association between NO<sub>2</sub> exposure and birthweight depending on the exposure model and the maximal distance between home address of the women and the nearest air quality monitoring station (AQMS).

Exposure Window	Distance between the home address of the women and the nearest AQMS																								
	<5 km								<2 km								<1 km								
	NO <sub>2</sub> level <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Nearest AQMS model				TAG model				Nearest AQMS model				TAG model				Nearest AQMS model				TAG model			
		n	$\beta^c$ (95% CI)	p	n	$\beta^c$ (95% CI)	p	n	$\beta^c$ (95% CI)	p	n	$\beta^c$ (95% CI)	p	n	$\beta^c$ (95% CI)	p	n	$\beta^c$ (95% CI)	p	n	$\beta^c$ (95% CI)	p			
1 <sup>st</sup> trimester																									
1 <sup>st</sup> tertile	245	0	0.23 <sup>d</sup>		246	0	0.53 <sup>d</sup>		136	0	0.03 <sup>d</sup>	136	0	0.14 <sup>d</sup>		52	0	0.33 <sup>d</sup>	51	0	0.56 <sup>d</sup>				
2 <sup>nd</sup> tertile	246	-20 (-93; 52)	0.58		244	-19 (-93; 55)	0.61	138	-55 (-153; 44)	0.27	136	-115 (-214; -16)	0.02	49	-119 (-300; 63)	0.20	50	-220 (-379; -61)	<10 <sup>-2</sup>						
3 <sup>rd</sup> tertile	259	-44 (-115; 28)	0.23		260	-29 (-116; 59)	0.52	143	-104 (-200; -9)	0.03	145	-106 (-223; 11)	0.08	54	-77 (-244; 90)	0.36	54	-97 (-272; 79)	0.28						
Continuous coding	750	-18 (-45; 10)	0.21		750	-34 (-95; 26)	0.26	417	-37 (-75; 1)	0.06	417	-51 (-128; 26)	0.19	155	-47 (-114; 19)	0.16	155	-52 (-154; 50)	0.32						
2 <sup>nd</sup> trimester																									
1 <sup>st</sup> tertile	246	0	0.99 <sup>d</sup>		247	0	0.60 <sup>d</sup>		136	0	0.48 <sup>d</sup>	138	0	0.76 <sup>d</sup>		51	0	0.41 <sup>d</sup>	51	0	0.94 <sup>d</sup>				
2 <sup>nd</sup> tertile	247	-87 (-157; -16)	0.02		245	12 (-67; 91)	0.76	135	-65 (-161; 31)	0.18	134	-18 (-126; 88)	0.73	50	-180 (-349; -10)	0.04	50	-45 (-208; 117)	0.58						
3 <sup>rd</sup> tertile	256	7 (-67; 82)	0.84		257	25 (-68; 118)	0.60	143	-25 (-123; 74)	0.62	142	14 (-109; 136)	0.83	52	-33 (-212; 147)	0.72	52	-4 (-196; 189)	0.97						
Continuous coding	749	-4 (-32; 24)	0.78		749	12 (-49; 73)	0.70	414	-20 (-60; 20)	0.32	414	-2 (-81; 77)	0.95	153	-31 (-99; 37)	0.37	153	-46 (-157; 65)	0.41						
3 <sup>rd</sup> trimester																									
1 <sup>st</sup> tertile	246	0	0.23 <sup>d</sup>		246	0	0.88 <sup>d</sup>		137	0	0.02 <sup>d</sup>	137	0	0.34 <sup>d</sup>		51	0	0.21 <sup>d</sup>	51	0	0.05 <sup>d</sup>				
2 <sup>nd</sup> tertile	251	-26 (-96; 43)	0.46		250	33 (-44; 110)	0.40	139	-81 (-174; 12)	0.09	140	-46 (-146; 54)	0.37	51	-11 (-175; 152)	0.89	51	-138 (-300; 25)	0.10						
3 <sup>rd</sup> tertile	254	-47 (-124; 31)	0.24		255	-3 (-101; 95)	0.95	141	-114 (-222; -6)	0.04	140	-65 (-193; 63)	0.32	51	-163 (-360; 35)	0.11	51	-211 (-420; -3)	0.05						
Continuous coding	751	-15 (-44; 14)	0.32		751	-13 (-74; 48)	0.67	417	-31 (-72; 10)	0.14	417	-34 (-113; 44)	0.39	153	-53 (-127; 21)	0.16	153	-104 (-216; 8)	0.07						
Pregnancy																									
1 <sup>st</sup> tertile	246	0	0.71 <sup>d</sup>		247	0	0.58 <sup>d</sup>		137	0	0.36 <sup>d</sup>	136	0	0.65 <sup>d</sup>		52	0	0.22 <sup>d</sup>	52	0	0.73 <sup>d</sup>				
2 <sup>nd</sup> tertile	250	-38 (-108; 31)	0.28		249	-32 (-114; 50)	0.44	136	-72 (-167; 23)	0.14	138	-25 (-132; 81)	0.64	50	-177 (-344; -11)	0.04	50	-30 (-203; 142)	0.73						
3 <sup>rd</sup> tertile	257	-3 (-75; 69)	0.94		257	-28 (-117; 61)	0.54	143	-20 (-117; 77)	0.68	142	-28 (-140; 85)	0.63	52	-47 (-216; 121)	0.58	52	-30 (-206; 146)	0.73						
Continuous coding	753	-11 (-40; 18)	0.45		753	-15 (-86; 57)	0.69	416	-30 (-71; 11)	0.15	416	-37 (-129; 54)	0.42	154	-46 (-118; 27)	0.21	154	-83 (-208; 42)	0.19						

TAG: Temporally-adjusted geostatistical model.

<sup>a</sup> adjusted for maternal age at conception, gestational age at delivery (linear and quadratic terms), sex of newborn, maternal height (continuous variable), pre-pregnancy weight (broken stick model with a knot at 60 kg), birth order, centre, trimester of conception, maternal age at end of education, active smoking during the second trimester of pregnancy (binary variable), passive smoking during the second trimester of pregnancy.

<sup>b</sup> Tertiles were constructed separately for each buffer, exposure model and exposure window.

Tertiles of exposure for women living less than 5 km away from an AQMS using the nearest AQMS model (or the TAG model): 1<sup>st</sup> trimester of pregnancy [7.7; 21.9], ]21.9; 35.9], ]35.9; 45.8] (J10.3; 20.8], J20.8; 25.9], J25.9; 38.6J), 2<sup>nd</sup> trimester of pregnancy ]7.7; 22.5], ]22.5; 36.6], J36.6; 45.7] (J9.7; 20.8], J20.8; 26.8], J26.8; 41.2J), 3<sup>rd</sup> trimester of pregnancy ]7.3; 21.6], J21.6; 34.7], J34.7; 46.0] (J8.6; 19.9], J19.9; 26.1], J26.1; 39.6J), whole pregnancy ]9.8;

20.4], ]20.4; 36.1], ]36.1; 42.9], (J11.9; 21.6], J21.6; 25.7], J25.7; 36.6].

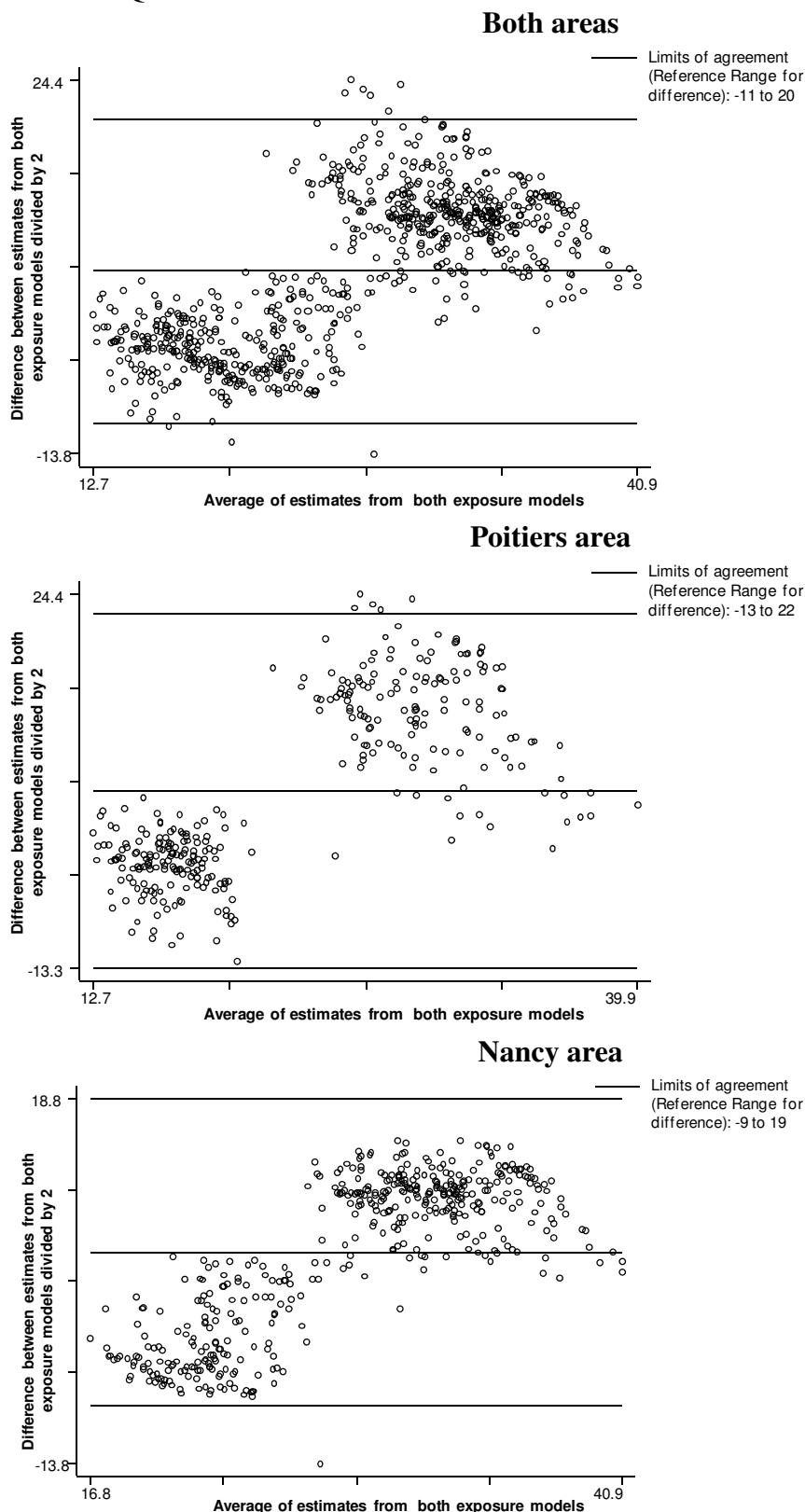
Tertiles of exposure for women living less than 2 km away from an AQMS using the nearest AQMS model (or the *TAG model*): 1<sup>st</sup> trimester of pregnancy ]7.7; 25.0], ]25.0; 37.4], ]37.4; 46.0] (J10.5; 21.7], J21.7; 27.4], J27.4; 39.2], 2<sup>nd</sup> trimester of pregnancy ]7.7; 25.7], ]25.7; 38.0], ]38.0; 45.6] (J11.1; 22.4], J22.4; 27.8], J27.8; 42.7], 3<sup>rd</sup> trimester of pregnancy ]7.4; 25.7], ]25.7; 37.0], ]37.0; 46.4] (J11.4; 20.9], J20.9; 27.2], J27.2; 40.1]), whole pregnancy ]9.8; 26.2], ]26.2; 37.1], ]37.1; 43.1] (J14.9; 22.7], J22.7; 26.9], J26.9; 37.9].

Tertiles of exposure for women living less than 1 km away from an AQMS using the nearest AQMS model (or the *TAG model*): 1<sup>st</sup> trimester of pregnancy ]7.7; 28.5], ]28.5; 36.8], ]36.8; 46.3] (J10.5; 21.8], J21.8; 28.7], J28.7; 42.2], 2<sup>nd</sup> trimester of pregnancy ]7.8; 27.7], ]27.7; 38.1], ]38.1; 45.8] (J11.1; 22.9], J22.9; 30.6], J30.6; 43.1], 3<sup>rd</sup> trimester of pregnancy ]7.4; 27.6], ]27.6; 37.6], ]37.6; 46.9] (J11.4; 21.7], J21.7; 29.7], J29.7; 44.8]), whole pregnancy ]10.1; 30.4], ]30.4; 37.2], ]37.2; 43.1] (J14.9; 24.1], J24.1; 28.8], J28.8; 39.0].

<sup>c</sup> Parameter of the linear regression model associated with NO<sub>2</sub>, corresponding to the difference in mean birth weight expressed in grams with respect to the first exposure tertile or, for the continuous coding, to the change in mean birth weight for each increase by 10 µg/m<sup>3</sup> in exposure.

<sup>d</sup> p for linear trend across exposure tertiles.

Supplemental Material, Figure 1: Bland-Altman plot for NO<sub>2</sub> exposure levels during whole pregnancy as estimated by the nearest air quality monitoring station (AQMS) model or by the temporally-adjusted geostatistical (TAG) model for women living less than 5 km away from a permanent AQMS.



Supplemental Material, Figure 2: Scatter plot and corresponding Kappa coefficient between NO<sub>2</sub> exposure levels during whole pregnancy as estimated by the nearest air quality monitoring station (AQMS) model or by the temporally-adjusted geostatistical (TAG) model for women living less than 5 km away from a permanent AQMS. A and D: analyses including the whole study population; B and E: Poitiers area only; C and F: Nancy area only.

